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EXAMINER

SINGH, RAMNANDAN P

ART UNIT PAPER NUMBER

2646

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/898,285

Applicant(s)

LIM, HA KYOON

Examiner

Ramnandan Singh

Art Unit

2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-9,11-13 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9,11-13 and 16-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed on April 01, 2005 have been fully considered but they are not persuasive.

(i) Applicant's argument---"In contrast, Arimilli describes a data multiplexing network, wherein , for an FXO interface, a DSP 56002 circuit U14 operates to detect a ring from a PBX (exchange) and returns an off-hook signal to the station side pf the PBX (exchange) (see Paragraph 67 and Figure 6C of Arimilli). Thus , unlike the present invention of claims 1, 5 and 16, Arimilli utilizes an exchange (PBX) and does not operate in one to one communication" , page 7.

Examiner's response—Examiner respectfully disagrees. Applicant is not interpreting the above description by Arimilli in a proper context. In this respect, Applicant is directed to [Paragraph 0053 ] of Arimilli wherein " The FXS (Foreign Exchange Station) mimics the subscriber-side of a standard tip and ring two-wire telephone connection either as a loop or a ground start configuration. ....The FXO (Foreign Exchange Office) interface mimics the central office or provider-side of a standard tip and ring two-wire telephone connection". Further, Arimilli teaches that "The FXS connection on VCE channel 1 circuit 308 or VCE channel 2 circuit 309 shown in Figs. 4A and 4B would appear to be a telephone central office (CO) to this telephone equipment (or a PBX mimic of a CO). Thus, if a user picked up the handset of a standard telephone connected the FXS interface at Site "A" of Fig. 5A, the telephone of fax machine at site "B" would ring [Para: 0055; 0056]. Clearly, both the FXS interface

and the FXO interface replace an exchange in the communication between analog lines which do not have a special exchange.

(ii) Applicant's argument---"Also, the ring in Arimilli is generated from an external source, such as the PBX " on pages 7-8.

Examiner's response-----Examiner disagrees. As shown above, since the FXO interface of Arimilli mimics the central office (CO), the FXS connection would appear to be a telephone central office (CO) to this equipment (or a **PBX-mimic of a CO**) [Para: 0055]. Thus, the FXS interface (i.e. a PBX-mimic of CO) inherently generates a virtual ring.

(iii) Applicant's argument—"In particular, Applicant submits that the cited references do not teach or suggest an interface device using an analog exclusive line comprising a local ring generating unit for notifying a connection request signal of the FXO interface to the modem init from within the interface device" on page 8.

Examiner's response--- Examiner disagrees. In this respect, Applicant is respectfully directed to the rejection of claims 1, 5 and 16 as given in this Office action.

## 2. **Status of Claims**

Claims 1, 4 and 5 are amended.

Claims 3, 10, 14 and 15 are cancelled.

Claims 1-2, 4-9, 11-13 and 16-19 are pending.

***Specification***

3. The specification is objected to because of the following:

The specification states "The modem unit 11 supports an FXO interface" on page 3, line 4. The term "FXO" has not been defined.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-2, 4-9, 11-13, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arimilli [US 20030152105 A1] in view of Koenig et al [US 5,740,241].

Regarding claim 1, Arimilli teaches an interface device for communicating data using an analog exclusive line (or **single analog link 313**) [Para: 0003; 0042; 0048 ] with an FXO interface [Figs. 4B, 5A, 5B, 6C], the interface device comprising:

a modem unit (**300**) for modulating and demodulating data [Figs. 3, 4A, 6B; Para: 0040-0042; 0170-0171; 0200; 0202];

a memory unit (i.e. a **local RAM memory 604**) in communication with the modem unit for storing an initial code and a control program for operation of the modem unit [Figs. 4A-6C; Para: 0060];

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an FXS signal unit for recognizing a connection request signal from the FXO interface [Figs. 4B, 5A, 5B, 6C; Para: 0053-0057; 0066-0068]; and

a main processor unit (306) for providing data to the modem unit to be transmitted to the FXO interface, receiving the demodulated data from the modem unit, and controlling the operation of the modem unit and the FXS interface unit [ Figs. 4A, 4B, 5A-5C, 6B-6C].

Although Arimilli teaches an FXS interface having a PBX mimic of a CO to establish a communication link based on a link request through this local mimicked PBX wherein the ring generation is **inherently** present in the interface [Para: 0170-0171; 0195; 0200], he does not disclose expressly a ring generating unit.

Koenig et al teach a local ring generating unit (400) for notifying a connection request signal of the FXS interface wherein each FXS channel provides an **internally-generated ringback tone** [Fig. 4; col. 17, lines 10-17; col. 21, lines 28-50]

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the local ring generating unit of the FXS interface of Koenig et al with Arimilli to demonstrate the internally-generated ringback capability of the interface of the Arimilli 's mimicked PBX associated with the interface.

Further, Arimilli does not teach expressly an impedance matching unit for matching impedance with the analog exclusive line. However, techniques of an impedance matching for transmission lines are well-known in the art.

Koenig et al teach a method for performing automatic impedance matching to adapt to various analog modem types and line lengths [Fig. 2; col. 18, lines 14-43; col. 12, lines 62-67; col. 13, lines 11-18; col. 13, lines 40-44].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide the impedance matching unit of Koenig et al with Arimilli in order to attenuation/frequency distortion and return loss of transformer-coupled wire-line communications circuits [Koenig et al; col. 12, lines 62-67].

In addition, Arimilli does not teach expressly a hybrid 2:4 wire conversion unit in communication with the modem unit for converting a four wire interface from the modem unit into a two wire interface for the analog exclusive line. It may, however, be noted that the use of a hybrid 2:4 wire conversion unit in telecommunications systems is well-known in the art.

Koenig et al teach a hybrid 2:4 wire conversion unit in communication with the modem unit for converting a four wire interface from the modem unit into a two wire interface for the analog exclusive line [Figs. 11, 12; col. 3, lines 19-38].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide the hybrid 2:4 wire conversion unit of Koenig et al with Arimilli in order to adequately separate the transmit signal from the received signal in a full-duplex voice system [Koenig et al; col. 3, lines 11-18].

Claim 5 is essentially similar to claim 1 and rejected for the reasons stated above.

Claim 16 is essentially similar to claim 1 except for receiving an external clock signal from the main processor unit; checking a cut-off status; using a local ring generating unit having a controlled 20 Hz ring signal; and detecting an off-hook state.

In this context, Arimilli teaches receiving an external clock signal from the main processor (**620**) [Para: 0099].

Further, Koenig et al teach the method comprising the steps of:

checking a cut-off status [col. 9, lines 4-11; col. 26, line 35 to col. 27, line 4];  
using the external clock signal, a local ring generating unit (400) having a controlled 20 Hz ring signal [col. 26, line 62 to col. 27, line 4]; and  
detecting an off-hook state [col. 14, lines 11-19].

Regarding claim 2, Arimilli further teaches the interface device, wherein the FXS signal unit forms a closed circuit (i.e. **loop**) with the FXO interface attempting



connection, and senses a connection request of the FXO interface by sensing a loop current flowing the closed circuit [Para: 0053; 0056; 0067].

Regarding claim 4, Arimilli further teaches the interface device wherein the ring alarm signal is internally simulated by using a programmable chip (i.e. CODEC chip U12) in a CODEC [Para: 0072].

Regarding claims 6-9, the limitations are shown above.

Regarding claim 11, Koenig et al further al teach the interface device, wherein the ring alarm signal of the local ring generating unit (**1033**) is a 20 Hz signal [Fig. 9B; col. 26, line 62 to col. 27, line 4].

Regarding claims 12-13, Koenig et al further al teach the interface device wherein the FXS signal unit senses an off-hook state and forming a call path to a designated device and the FXS signal unit senses a loop current to detect the off-hook state [col. 14, lines 12-19; col. 12, lines 28-50; col. 13, lines 1-10; col.17, lines 10-17; Fig.4; col. 21, lines 28-50].

Regarding claims 17-19, the limitations are shown above.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Katko [US 5,991,310] teaches a method and apparatus for bypassing a local exchange carrier to permit an independent central office to provide local calling services [Whole document; and

(ii) Kay et al teach a virtual foreign exchange service [Abstract; Figs. 1-3].

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh  
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Art Unit 2646



  
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**SUPERVISOR, PATENT EXAMINER**